

REMARKS

The claims have not been amended. Accordingly, claims 1-12 are currently pending in the application, of which claim 1 is an independent claim. Applicants respectfully request reconsideration and timely withdrawal of the pending rejections for the reasons discussed below.

Rejections Under 35 U.S.C. § 103

Claims 1-4 and 9-11 stand rejected under 35 U.S.C. 103(a) as obvious over Japanese Patent Application Publication No. 11-273731 applied for by Naoki ("Naoki"). Applicants respectfully traverse the Examiner's rejections for at least the following reasons.

To establish an obviousness rejection under 35 U.S.C. § 103(a), four factual inquiries must be examined. The four factual inquiries include (a) determining the scope and contents of the prior art; (b) ascertaining the differences between the prior art and the claims in issue; (c) resolving the level of ordinary skill in the pertinent art; and (d) evaluating evidence of secondary consideration. *Graham v. John Deere*, 383 U.S. 1, 17-18 (1966). In view of these four factors, the analysis supporting a rejection under 35 U.S.C. 103(a) should be made explicit, and should "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed. *KSR Int'l. Co. v. Teleflex, Inc.*, 550 U.S. ___, slip op. at 14-15 (2007). Furthermore, even if the prior art may be combined, the combination must disclose or suggest all of the claim limitations. See *in re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicants respectfully submit that Naoki fails to teach or suggest each and every feature of claim 1.

Specifically, claim 1 recites, *inter alia*:

wherein the linear polymer having P=O bonds is present in an amount ranging from about 0.005 to less than 5 wt% based on the total amount of the electrolyte. (*emphasis added*)

Naoki fails to teach or suggest at least such features. As stated in the Office Action, “Naoki does not disclose the density of the polymer to define a wt% of polymer in the electrolyte” (page 3). To cure this deficiency the Office Action asserts that “the density of most materials is about 1g/ml and thus, vol% is approximately wt%” (page 3). Applicants disagree. In Naoki, the density of the linear polymer having P=O bonds is greater than 1 g/ml. For example, the density of diethyl vinyl phosphonate is 1.068 g/ml. Hence, the vol% of the polymer cannot be used to teach a wt%. Therefore, Naoki fails to teach or suggest “wherein the linear polymer having P=O bonds is present in an amount ranging from about 0.005 to less than 5 wt% based on the total amount of the electrolyte.”

Furthermore, even if the vol% of Naoki could be used to teach wt%, the Examiner has still failed to establish a *prima facie* case of obviousness. The range of 5-20% by volume disclosed by Naoki fails to overlap or touch the claimed range of the linear polymer having P=O bonds of about 0.005 to less than 5 wt% recited in claim 1. Thus, as the examiner concedes at page 3 of the Office Action, Naoki fails to disclose every feature of claim 1. To cure this deficiency, the Office Action states that “Naoki discloses that phosphoric ester polymers impart flameproofing properties to the electrolyte solution, thus clearly teaching that phosphoric ester polymer is a result effective variable” (page 5). However, the failure of Naoki to disclose every feature of claim 1 relates to the concentration of the phosphoric ester polymer, not the presence or absence of the phosphoric ester polymer. A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Thus, the particular parameter is the concentration of the phosphoric ester polymer. However, the

examiner has failed to establish that Naoki's range of 5-20% by volume of the phosphoric ester polymer is a result-effective variable.

Further, since Naoki does not disclose a range overlapping or touching the claimed range of claim 1, it would not have been obvious for one of ordinary skill in the art to discover the range of claim 1 by searching for an optimum range of Naoki. "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages." *Peterson*, 315 F.3d at 1330 65 USPQ 2d at 1382 (emphasis added). However, Naoki does not disclose a range overlapping or touching the claimed range of claim 1. Therefore, the claimed range recited in claim 1 is not even partially within the disclosed set of percentage ranges of Naoki. For at least this reason, it would not have been obvious for one of ordinary skill in the art to discover the range of claim 1 by searching for an optimum combination of percentages within the disclosed range of Naoki.

If the claimed ranges and the prior art ranges do not overlap, a *prima facie* case of obviousness is only established if the claimed ranges and the prior art ranges are close enough that one skilled in the art would have expected them to have the same properties. MPEP Chapter 2144.05.I (citing to Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985)). Although the claimed range and the prior art range do not overlap, the Examiner has failed to demonstrate that the ranges are close enough that one skilled in the art would have expected them to have the same properties.

For at least these reasons, the Examiner has failed to establish a *prima facie* case of obviousness over claim 1.

Moreover, even assuming *arguendo* that the Examiner has established a *prima facie* case of obviousness over claim 1, a *prima facie* case of obviousness can be rebutted by the showing of criticality. As noted in Applicants' response filed March 1, 2007, MPEP

§2144.05(II)(A) states that “differences in concentration and temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating that such concentration or temperature is critical.” (citations omitted). Applicants’ response filed November 14, 2006, presented the criticality of the claimed range for which the Examiner has failed to address. In Applicants’ response filed November 14, 2006, Applicants cited to page 9, lines 4-9 of the specification to support the criticality of the claimed range:

The linear polymer having P=O bonds is preferably present in an amount ranging from about 0.005 to about 5 wt% based on the total amount of the electrolyte. The preferable effect of the linear polymer is not likely to occur when the polymer is present in an amount of less than about 0.005 wt%, and battery performance such as capacity characteristics deteriorates when the polymer exists in an amount exceeding 5 wt%.

Thus, Applicants have demonstrated that the claimed range recited in claim 1 and the range disclosed in Naoki do not overlap or touch, demonstrated the criticality of Applicant’s claimed range, and distinguished Applicant’s claimed range from Naoki’s range by demonstrating that Naoki’s range would cause deterioration of battery performance. Therefore, the Examiner has failed to establish a *prima facie* case of obviousness over Naoki.

Furthermore, Naoki fails to teach or suggest each and every feature of claim 11.

Specifically, claim 11 recites, *inter alia*:

wherein the linear polymer having P=O bonds is formed of a polymerized phosphonate compound with a polymerizable functional unsaturated hydrocarbon group or allyl tetraisopropylphosphonodiamidite

Naoki fails to teach or suggest at least such features. Rather, Naoki discloses a phosphate (paragraph 0038). Hence, Naoki does not teach “a polymerized phosphonate compound with a polymerizable functional unsaturated hydrocarbon group or allyl tetraisopropylphosphonodiamidite.”

Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1 and 11. Claims 2-4 and 9-11 depend from claim 1 and are allowable at least for this reason. Since none of the other prior art of record discloses or suggests all the

features of the claimed invention, Applicants respectfully submit that independent claim 1, and all the claims that depend therefrom, are allowable.

Claim 12 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Naoki in view of U.S. Patent Application Publication No. 2002-0177027 applied for by Yeager ("Yeager").

Applicants respectfully submit that claim 1 is allowable over Naoki alone, and Yeager fails to cure the deficiencies of Naoki noted above with regard to claim 1. Hence, claim 12 is allowable at least because it depends from an allowable claim 1.

Claims 1 and 5-8 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Naoki in view of U.S. Patent No. 6,645,671 applied for by Tsutsumi ("Tsutsumi").

Applicants respectfully submit that claim 1 is allowable over Naoki alone, and Tsutsumi fails to cure the deficiencies of Naoki noted above with regard to claim 1. Hence, claims 5-8 are allowable at least because they depend from an allowable claim 1.

Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claim 1. Claims 5-8 and 12 depend from claim 1 and are allowable at least for this reason. Since none of the other prior art of record discloses or suggests all the features of the claimed invention, Applicants respectfully submit that independent claim 1, and all the claims that depend therefrom, are allowable.

CONCLUSION

Applicants believe that a full and complete response has been made to the pending Office Action and respectfully submit that all of the stated grounds for rejection have been overcome or rendered moot. Accordingly, Applicants respectfully submit that all pending claims are allowable and that the application is in condition for allowance.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative at the number below to expedite prosecution.

Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,

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